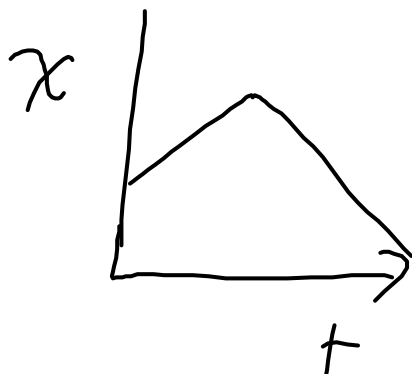
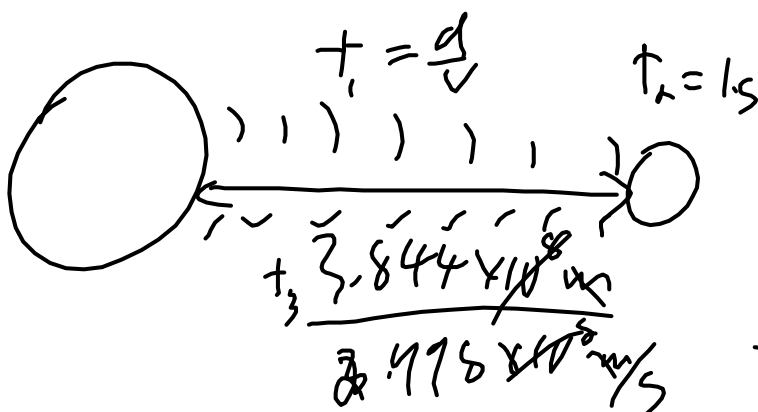


# Go over homework Graphing Motion



Q 31

$$c = 2.998 \times 10^8 \text{ m/s}$$



$$t = t_1 + t_2 + t_3$$

$$= 1.2765 \times 10^{-7} + 1$$

$$= \boxed{3.65} \times \boxed{45}$$

24

$$v = \frac{d}{t} = \frac{2\pi r}{t} = \frac{2\pi (6.38 \times 10^6 \text{ m})}{t}$$

$$\frac{2\pi \times 1.276 \times 10^7 \text{ m}}{(23 \times 60 \text{ min}) + 56 \text{ min} \times 60 \text{ s}} = 465 \text{ m/s}$$

$$\frac{\text{60 minutes}}{\text{hour}}$$

## Graphs of Motion

x-t or s-t graph the slope is the velocity

If the graph is curved, then the slope of the tangent to the curve is the instantaneous velocity

velocity-time graph

to convert from position or displacement time graphs to velocity-time graphs, use the slope.

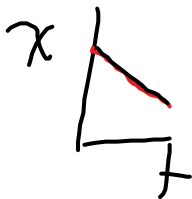
flat line = zero velocity

$x$  |  $\frac{dx}{dt}$   $\rightarrow$   $v$  |  $\frac{dv}{dt}$

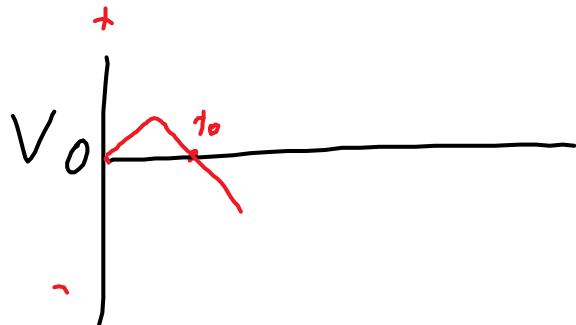
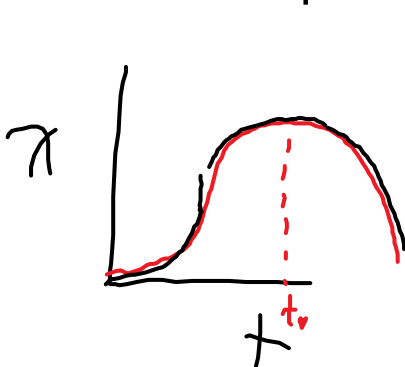
straight line = constant velocity

$x$  |  $\frac{dx}{dt}$   $V$  |  $\frac{dv}{dt}$

going towards the negative direction = negative velocity



if the curve is a parabola, then the v-t graph is linear with non-zero slope

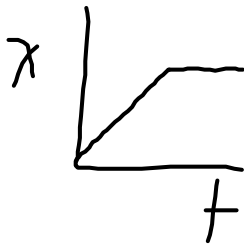


Area under a v-t graph is displacement

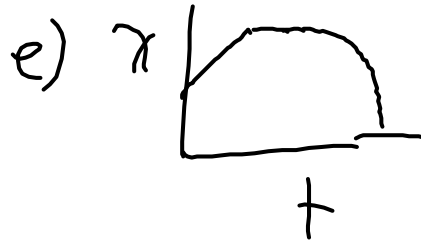
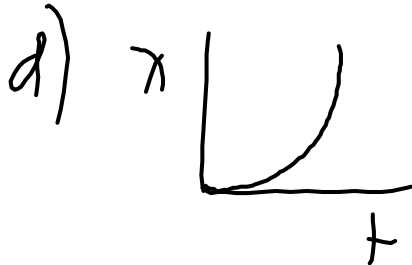
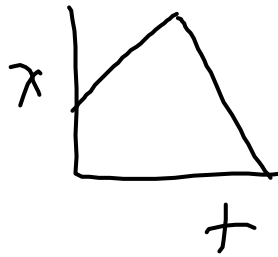
eg.

1. draw the v-t graph for the following x-t graphs and do the motion with your hand

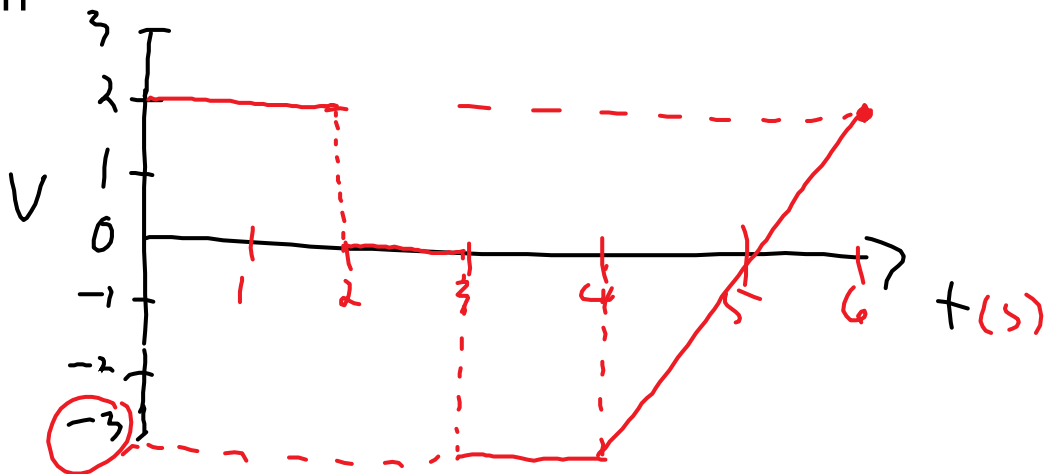
a)



b)



Q 2 For the following velocity -time graph, determine the displacement for each time interval and draw the s-t graph



Hecht p52-54  
problems 71, 73, 78,  
p48 MC 6-10